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University of Maine.

Maine Agricultural Experiment Station

ORONO

BULLETIN No. 182. JUNE 1910

FOUR RARE APHID GENERA FROM MAINE

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BULLETIN No. 182

FOUR RARE APHID GENERA FROM MAINE.*

By Edith M. Patch.

It often seems safer to describe American species of aphids as new and run the risk of a synonym than to record them under existing European names and thus incur the possibility of confusion. *S. glyceriae, M. abietinus* and *S. oblongus,* however, are very characteristic, the European descriptions are careful, apparently there is no confusion in European literature in regard to them and each occurs in Maine on the identical genus of food plant upon which it is recorded in Europe. I am venturing, therefore, to present them under their Old World names trusting that they may be able to keep them. *Mastopoda pteridis* though well known on account of its peculiar structure has been so seldom met with that it is appropriately included in this group of rare genera.

SIPHA GLYCERIAE.

1843. *Aphis glyceriae* Koch.
1860. *Sipha glyceriae* Passerini.

This most remarkable aphid excited my curiosity when I first came upon it on account of the fact that many of the aphids were completely submerged in the water on dead blades of grass and apparently in no wise disturbed or inconvenienced by this circumstance, but were to all appearances as comfortable as those above water on live blades.

In structure this species is no less striking than in habits. The body is very flat and appressed to the leaf. The entire body is armed with stout spines. The cornicles are circular openings elevated very slightly above the surface of the abdo-

*Papers from the Maine Agricultural Experiment Station: Entomology No. 44.

men. The beak is stout and short extending to the second coxa. The 5-jointed antenna is short, not reaching the abdomen. The eyes are small but prominent as they protrude conspicuously from the sides of the head. The wings are transparent, narrow and much longer than the body, the venation is practically that of *Macrosiphum*. It is a green species with the abdomen dotted with darker green.

The single large collection made by the writer was taken June 22, 1909, from rush, *Juncus* sp., growing in a marsh pool at Orono. Alate and apterous viviparous forms, nymphs and pupae comprised this collection. Figures 198-205 present photo-micrographs and drawings of this species.

Measurements made from balsam mounts are as follows:— *Apterous viviparous form*: Total length 2.25 mm.-2.55 mm. Antenna I, 0.06 mm.; II, 0.075 mm.; III, 0.21 mm.; IV, 0.1 mm.; V (base) 0.11 mm., (spur) 0.11 mm. No sensoria except distal ones of IV and V. Fig. 204.

Winged viviparous form: Total length 1.95 mm. Length of fore wing 2.85 mm. Length of hind wing 1.56 mm. Antenna I, 0.05 mm.; II, 0.05 mm.; III, 0.18 mm.; IV, 0.125 mm.; V (base) 0.1 mm., (Spur) 0.125 mm. III with about 6 large circular sensoria. Distal sensoria on IV and V. The peculiar sensoria on V are well shown in figures 203-203a.

Antenna of pupa much like that of the apterous form. Fig. 205.

MINDARUS ABIETINUS Koch.

The first collection of *Mindarus* in Maine was a single winged specimen taken at Orono June 16, 1905, from leaves of White Pine (*Pinus strobus*). This was kindly determined by Mr. Pergande as *Mindarus* (*Schizoneura*) *pinicola* Thos. the following winter. The next pine collection of this species made by the writer was near Orono June 30, 1909, when a single winged specimen was again taken upon a pine needle. These accord with the description of the winged form by Thomas and also with careful additional notes, measurements, and camera lucida drawings made by Mr. J. J. Davis from the type specimen* and kindly sent me.

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*In the collection of Ill. St. Lab. of Nat. Hist., single winged specimen in balsam labeled "Pine Carb(ondale, Ill.) April 20, 1878."

However on June 11, 1908, a large collection of pale green pupae on the tips of balsam fir was brought to me. Many of these molted during the night and the winged aphids proved to be *Mindarus* and to all appearances *abietinus* Koch described from *Abies* in Europe. On June 14, 1909, a large collection of pupae was made by the writer from balsam fir and winged forms were again secured. These accord with the type specimen of *pinicola* Thomas and it is probable that the pine and the balsam *Mindarus* are the same species, though biological proof is yet lacking. Late in May, 1910, *Mindarus abietinus* occurred in enormous numbers at Orono both on balsam fir and spruce (*Picea canadensis*). The new growth became badly "ruffled" on infested twigs.

Pupa:—Body pale green and very pulverulent. Total length 2 mm. Antenna pale proximal half, dusky distal half, extends to middle of thorax. I, 0.075 mm.; II, 0.06 mm.; III, 0.21 mm.; IV, 0.11 mm.; V, 0.14 mm.; VI, 0.165 mm. Eyes dark. Beak extends to base of 3rd coxae. Wing pads a little dusky. Legs with femora and tibiae pale yellowish, tarsi dusky. Abdomen with fine white silky tufts in lateral rows on each side. Eight large wax gland areas occur in a lateral row on each side of abdomen. Other similar areas occur on the dorsum. These areas are somewhat circular and comprise about 80 or less minute wax pores. Color description from live specimens. Measurements and details from balsam mounts. Maine collection numbers 5-08 and 15-09. Figures 207, 211, 212. *Habits and Habitat.* Curling new tips of balsam fir (*Abies balsamea* Mill) and causing twip tips to look downy. Honey dew excreted in large quantities. June.

Migrant, Alate Viviparous ♀:—Head pale green, eyes dark. Beak extends to 3rd coxa. Antenna extends to abdomen. I, 0.06 mm.; II, 0.065 mm.; III, 0.36 mm.; IV, 0.225 mm.; V, 0.23 mm.; VI, 0.225 mm. III with about 12 large quasi transverse sensoria in an even row, extending nearly the whole length of III. IV, V and VI each with large sensorium at distal portion. The sensoria grouped about the large terminal sensorium of VI are distinct and separate. Spur of VI about one-third the length of the basal portion. IV, V, VI slightly imbricated. Thorax brown dorsal and ventral. Wings pale with dark but delicate veins. Stigma very long, curving to a point near distal

tip of wing. R_s* long and not much curved. M with 2 branches like *Schizoneura* and obsolete at base. Cu and A both slightly curved making the cell between them slightly oval. Costal margin of wing strongly arched. Hind wing broad, venation practically as in *Schizoneura*. Length of wing about *3 mm.* Legs with proximal half pale, distal part dusky, tibiae and tarsi dark. Abdomen pale green, pulverulent. Total length of body about 2.1 mm. Color description from live specimens. Measurements from balsam mounts. Maine collection numbers 5-08, 15-09. Figures 206, 208, 209, 210.

Apterous viviparous ♀. Body pale green, pulverulent. Length 2 mm. Antenna I, 0.07 mm.; II, 0.07 mm.; III, 0.15 mm.; IV, 0.085 mm.; IV, 0.11 mm.; VI, 0.14 mm.

This form was present thickly packed in tips of balsam fir and spruce in May, 1910. They matured about May 25. The honey dew was so abundant that the trees could not be touched without a sticky shower resulting. Maine collection numbers 21-10, 22-10.

Habits and Habitat. Developing in curled tips of *Abies balsamea* Mill and *Picea canadensis* Mill. Migrating from infested *Picea canadensis* twigs about mid-June, immediately after acquiring wings.

Professor O. W. Oestlund has collected this same species near the Pacific Coast.

Bibliography for This Genus in America.

1879. *Schizoneura pinicola* Thos. Rept. Ent. Ill. *8* (Thos. *3*) p. 137. Original description.

1887. *Schizoneura pinicola* Oestlund. Aphid. Minn. p. 30. Listed as not found in Minn.

1890. *Schizoneura pinicola* Packard. Forest Insects. p. 804. 4-line quotation from Thomas.

1899. *Schizoneura pinicola* Chittenden. Bul. Div. Forestry, U. S. Dept. Agric. *22*: 60. Mere mention.

1899. *Schizoneura pinicola* Britton. 22d Ann. Rept. Conn. Agr. Expt. Sta. for 1898. Brief account of an infestation of pine in Connecticut. Doctor Britton kindly informed me May 13, 1910, that the species concerned in this infestation was not given detailed study.

*For terminology of wing veins, the reader is referred to *Homologies of the Wing Veins of the Aphididae.* Ann. of the Ent. Soc. of America, Vol. II, No. 2.

1901. *Schizoneura pinicola* Hunter. Aphid. of N .A. p. 83. Bibliography.

1903. *Schizoneura pinicola* Clarke. List of Cal. Aphid. Can. Ent. Vol. 35. No. 9. Listed for California.

1906. *Schizoneura pinicola* Felt. Insects affecting Park and Woodland Trees. *2*: 753. Mere mention.

1909. *Mindarus abietinus,* Patch. Homologies of the Wing Veins of the Aphididae. Ann. of the Ent. Soc. of Am. Vol. II, No. 2. pp. 14, 15. Figs. 18, 19, 20. Discussion of the tracheation and venation of the wings.

SYMDOBIUS OBLONGUS.

On July 17, 1908, this striking species was collected at Orono where it was found to be gregarious upon the branches of birch (*Betula papyifera* Marsh). It occurred largely upon the growth of the previous season, and was difficult to collect on account of its tendency to drop from the branch at the slightest jar. Nymphs, pupae, and apterous and alate viviparous forms were taken in this collection. On August 20, 1908, a second collection of the apterous viviparous form was collected from the branches of birch (*Betula papyifera* Marsh) where it occurred in small colonies. The broad white bands on the dark antennae and the heavy shadowing of the wing veins make this a distinctive species.

Alate viviparous form. Head brown with red eyes. Antenna with I, II, III dark and IV, V, VI with proximal portion white and distal portion dark making a distant and conspicuous banding. I, 0.105 mm.; II, 0.055 mm.; III, 0.7 mm.; IV, 0.45 mm.; V, 0.4 mm.; VI (base) 0.2 mm., (Spur) 0.2 mm. Notice that the spur is very short. III, IV, V and VI are imbricated. About 15 protruding sensoria occur in a row on III, single large sensorium at distal part of V. VI with usual sensorium at base of spur, and separate attendant sensoria. Beak extends to second coxae. Prothorax and thorax brown. Wings with brown veins heavily shadowed. Length of wing 2.95 mm. Legs brown. Abdomen hirsute (spiny), brown with heavy transverse bands of darker brown. Cornicles yellowish white, short, broad, somewhat constricted at the middle, and with flaring opening. Figures 215-219. Color notes from live material. Measurements from balsam mounts. Maine collection number 41-08.

Apterous viviparous form. Head dark brown with red eyes.

Antenna with I, II, III dark, and IV, V, VI with proxmal portion white and distal portion dark. Imbrication and sensoria as in alate form. I, 0.15 mm.; II, 0.10 mm.; III, 0.87 mm.; IV, 0.54 mm.; V, 0.45 mm.; VI (base) 0.22 mm., spur 0.24 mm. Prothorax and thorax brown. Legs brown. Abdomen spiny, brown with darker transverse bands. Cornicles as in alate viviparous form.

The nymphs are brown and thickly beset with spines. Color notes from live material. Measurements from balsam mounts. Maine collection numbers 41-08, 61-08.

1837. *Aphis oblonga* von Heyden, Entomolog. Beiträge in Mus. Senckenberg.
1843. *Aphis oblonga.* Kaltenbach Pflanzenläuse, p. 133, species 101.
1844. *Aphis oblonga.* Ratzeburg. Forstinsekten III, p. 219.
1848. *Aphis oblonga.* Walker. Descriptions of Aphides. Ann. and Mag. Nat. Hist. Ser. 2.
1854-1857. *Callipterus oblongus.* Koch Pflanzenläuse, p. 219. Figs. 292, 293, 294.
1894. *Symdobius oblongus* Mordwilko. Rab. Lab. Zool. Kab. Varch. Univ. (K. Faune Anat. sem. Aphid) p. 54.
1895. *Lachnus* (*Callipterus Koch*) *oblongus.* Judeich und Nitsche. Forstinsektenkunde. (Mere mention) p. 1211.

MASTOPODA PTERIDIS Oestlund.

Since this curious species was recorded in 1886 from Minnesota, no account of a second collection has been published. It is interesting in this connection to include a brief description of the apterous form which the writer collected from brake fern near Orono, August 6, 1906. This was kindly determined for me by Professor Oestlund.

Apterous viviparous form: Head and thorax yellowish white, eyes dark. Antenna about the length of body with I, II and proximal half of III white, rest dark. Antenna 5-jointed (6 if spur is counted as distinct joint as in original description). I, 0.1 mm.; II, 0.07 mm.; III, 0.55 mm.; IV, 0.25 mm.; V, (base) 0.10 mm. (spur) 0.65 mm. III without sensoria. IV with single large sensorium at distal end. V with usual sensorium at base of spur. III, IV, V imbricated. The legs are the most characteristic part of this species, the tarsi being atrophied. Abdomen is yellowish white with dark scrawls and tracings. At base of cornicle is a round bright orange spot

which may be absent but is apparently characteristic as it is usually found both in the mature apterous form and in the young nymphs. Cornicles long (0.45 mm.) cylindrical and dark brown. Total length of body 1.65 mm. Color description from living material. Measurements from balsam mounts. Maine collection number 98-06. Figures 213, 214.

Bibliography.

1886. *Mastopoda pteridis,* Oestlund. List Minn. Aphid. p. 53. Original description.

1887. *Mastopoda pteridis,* Oestlund. Aphid. of Minn. p. 49. Description and brief account.

1898. *Mastopoda pteridis,* Packard. Textbook of Ent. pp. 103, 104. Fig. 114. Figures the leg.

1910. Wilson. Pro. Ent. Soc. Wash. Vol. *12,* p. 28. *Mastopoda pteridis,* Oestlund, is by error considered a synonym of *Aphis pteris-aquilinoides,* Raf.*

Explanation of Plates.

Figures 203-207 were drawn by Miss Charlotte M. King. The photomicrographs were taken by Mr. Royden L. Hammond.

Figs. 198-205. *Sipha glyceriae.* 198, Winged viviparous form; 199, pupa; 200, wings; 201, apterous viviparous form; 202, tip of abdomen of apterous viviparous form giving a good view of the cauda; 203, antenna of winged viviparous form; 204, antenna of apterous viviparous form; 205, antenna of pupa.

Figs. 206-212. *Mindarus abietinus.* 206, Antenna of winged viviparous form; 207, antenna of pupa; 208, wings; 209, tip of abdomen of winged form lateral aspect; 210, tip of abdomen

*Although it would seem to be impossible on the basis of the original description of *Aphis pteris-aquilinoides* to recognize this species if one should chance to re-discover it, fortunately Rafinesque included one character by which his species can readily be separated from *pteridis* Oestlund for he states that the "appendages" (*i. e.* cornicles) are short in *pteris-aquilinoides.* It is perhaps safe to hazard the guess that even Rafinesque would have noticed the atrophy of the tarsi if he had collected so remarkable a species.

As Rafinesque's papers are not easily accessible, his description of *Aphis pteris-aquilinoides* is quoted entire as follows:

"6. *Aphis Pteris-aquilinoides. (P. aquilina Amer. Auct.)* Body pale green, oboval, one line long; eyes brown, antens half a line long; appendages very short." Rafinesque designated the cornicles by the term "appendages."

of winged form dorsal aspect; 211, a single dorsal wax-gland area from pupa, greatly magnified; 212, pupa just before molting, showing the lateral and part of the dorsal wax-gland areas on pupal skin.

Figs. 213-214. *Mastopoda pteridis*, apterous viviparous form and antenna.

Figs. 215-219. *Symdobius oblongus*. 215, wings; 216, caudal tip of abdomen of winged form showing cornicles; 217, antenna showing the alternate banding of light and dark; 218, III, showing sensoria; 219, III, showing sensoria in profile.

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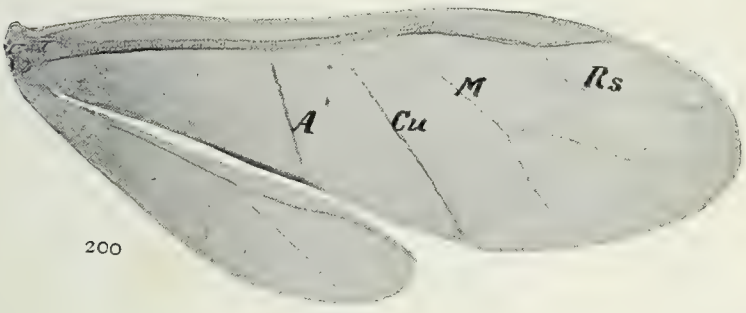

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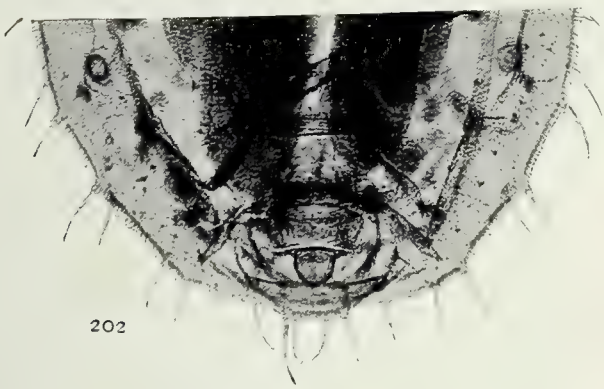

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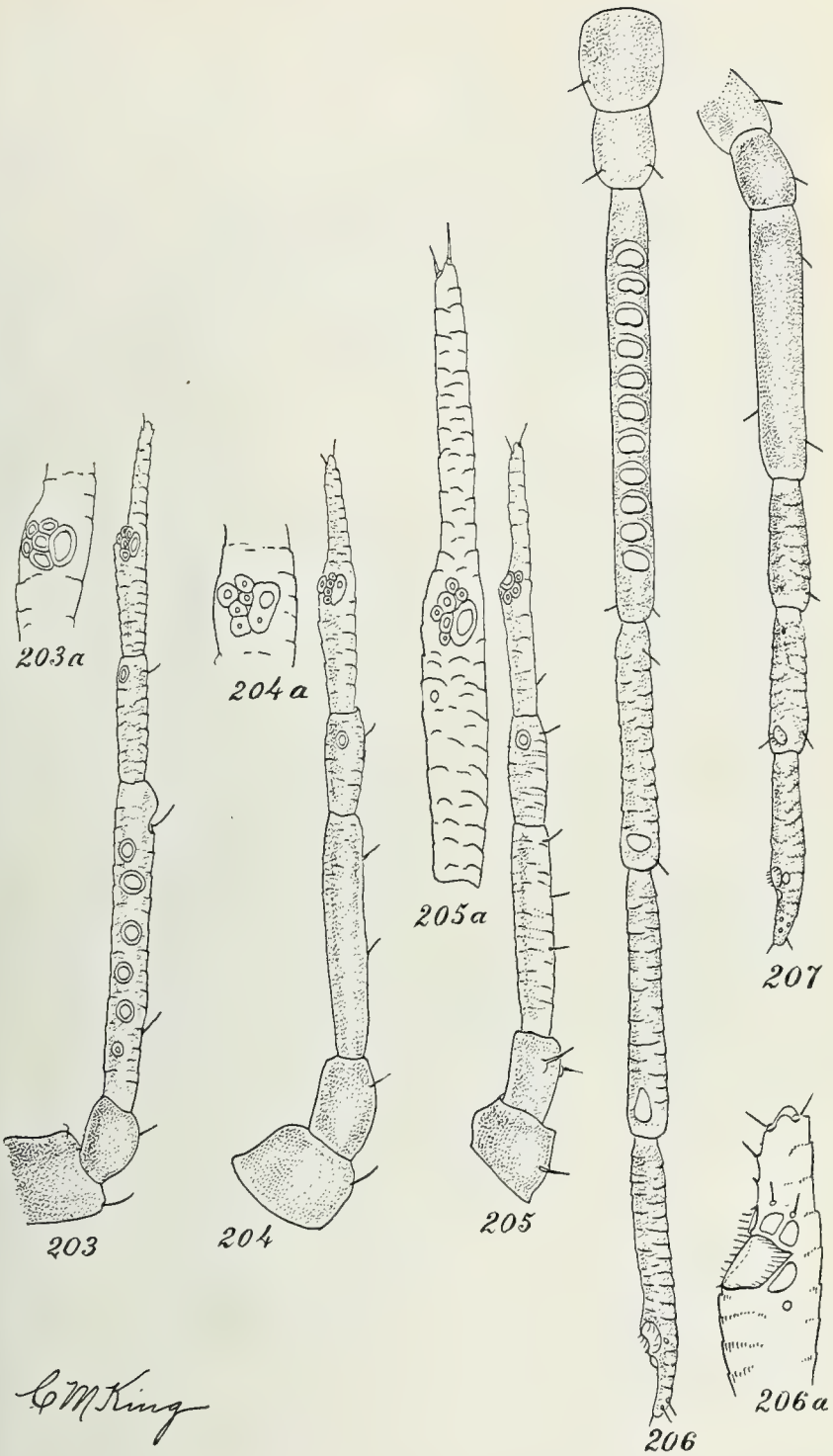
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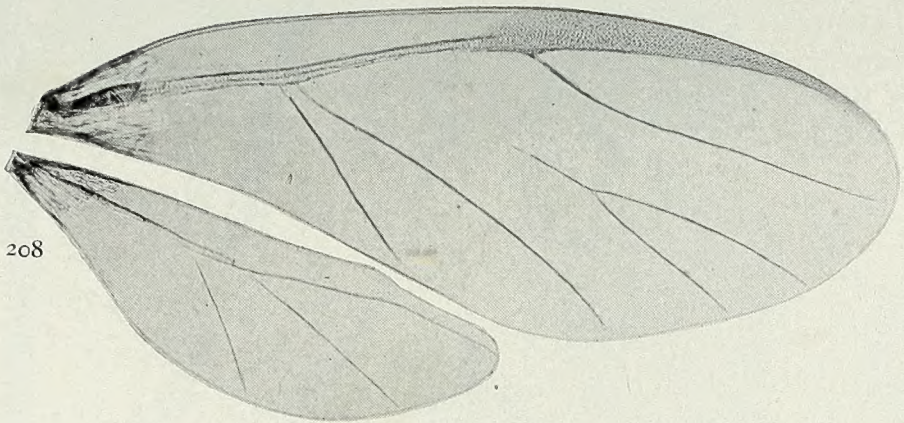

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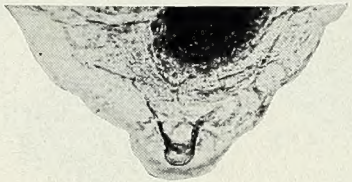

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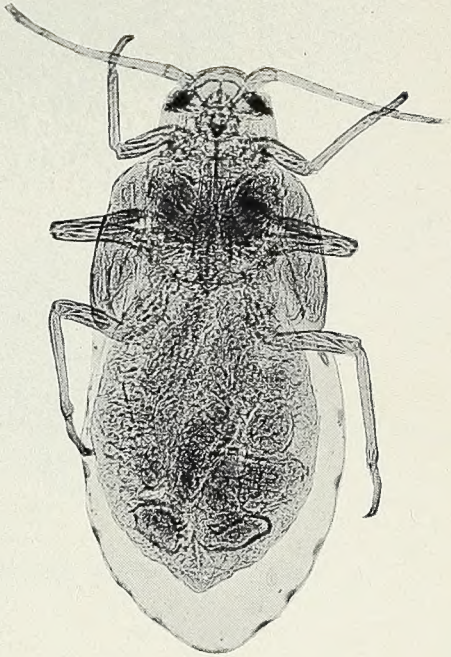

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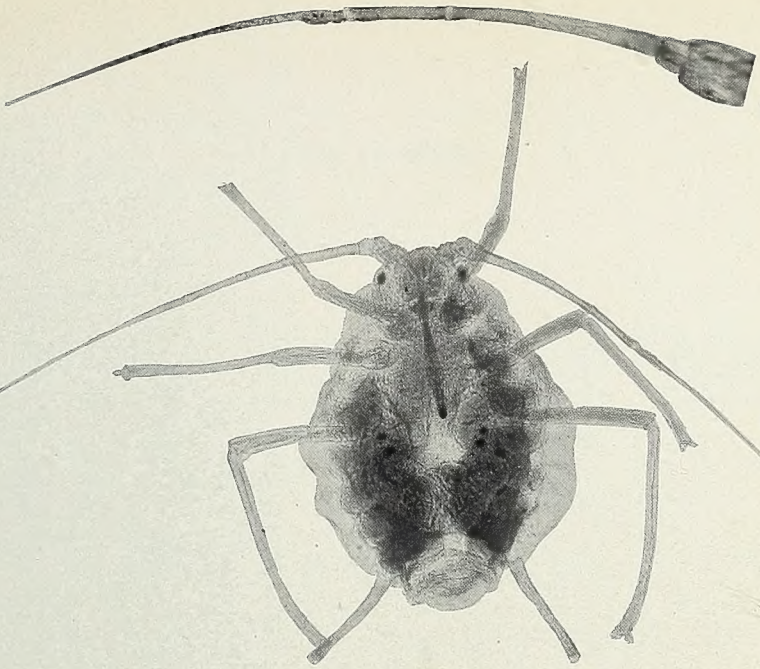
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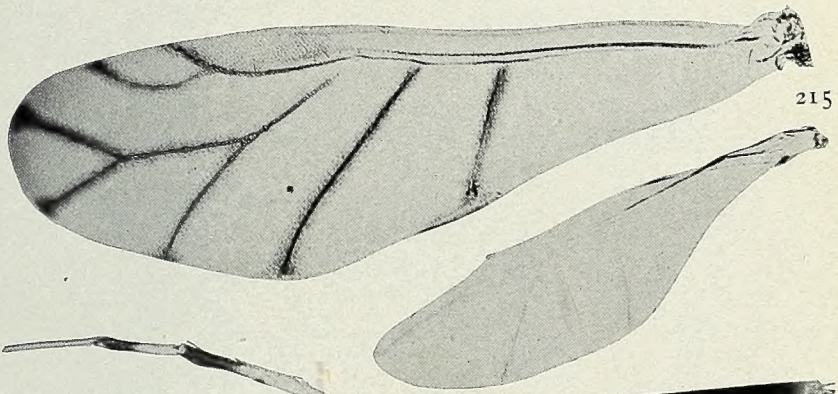
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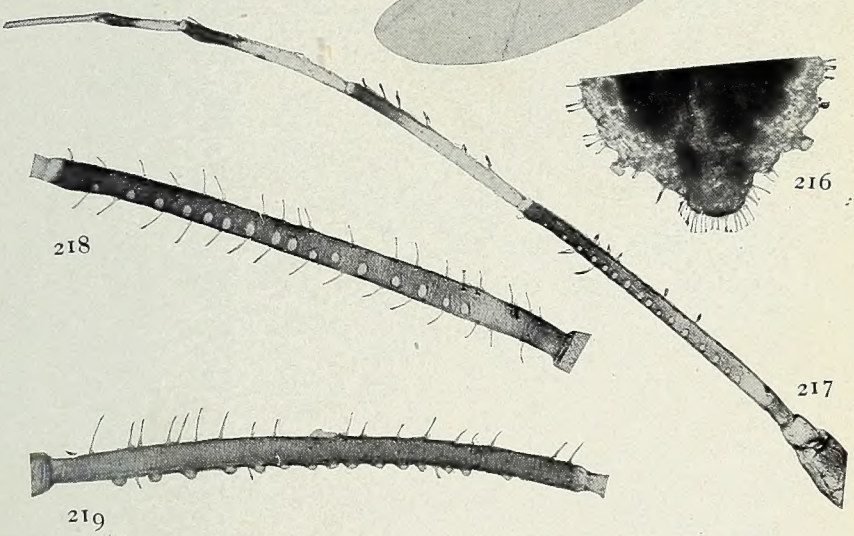
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